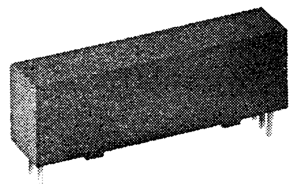
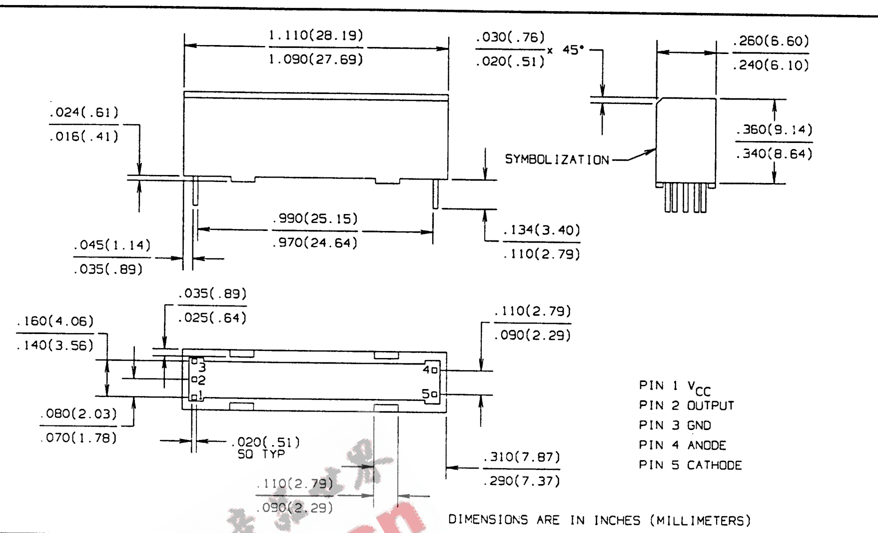
Product Bulletin OPI1266
July 1996

OPTEK

High Speed, Very High Voltage Isolator
Type OPI1266





Features

- TTL compatible output
- 16kV Isolation
- 500 kbits/s transfer rate
- Creepage path: 0.970" (24.64 mm)
- Air path: 0.970" (24.64 mm)
- t_{PHL}-t_{PLH} ≤ 500ns
- UL recognized File No. E58730[4]

Description

The OPI1266 consists of a GaAlAs LED coupled with a unique integrated circuit detector. Photons are collected in the detector by a photodiode and amplified by a high gain linear amplifier that drives a Schottky clamped open collector output transistor. The circuit is temperature, current, and voltage compensated. This design produces maximum DC and AC current isolation between input and output while providing TTL/LSTTL circuit compatibility. Propagation delay times are matched within 500ns over the entire temperature range for timing purposes.[2]

Absolute Maximum Ratings (T_A = 25° C unless otherwise noted)

Input-to-Output Isolation Voltage . . . . 16 kVDC[3](
Operating Temperature Range. . . . . -40° C to +70°
Storage Temperature Range . . . . -40° C to +85°
Lead Soldering Temperature [1/16 inch (1.6 mm) from case for 5 sec. with soldering iron]. . . . . 260° C(

Input Diode

Forward DC Current . . . . 50 m
Reverse Voltage 2.0
Peak Forward Current (1 µs pulse width, 300 pps) 3.0
Power Dissipation . . . . 100 m\

Output IC

Maximum Supply Voltage 7.0
Power Dissipation . . . . 100 m\

Notes:

(1) RMA flux is recommended. Duration can be extended to 10 sec max. when flow soldering.
(2) $\Delta T_P = t_{PHL}-t_{PLH}$.
(3) Measured with input and output leads shorted. Typical input/output capacitance is 0.05 pF.
(4) UL recognition is for 5833 VAC, for 1 minute.

Schematics

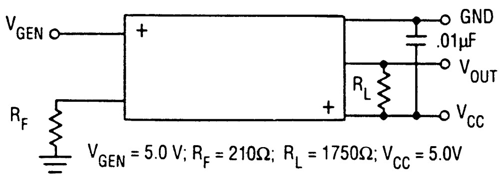


FIG. 1

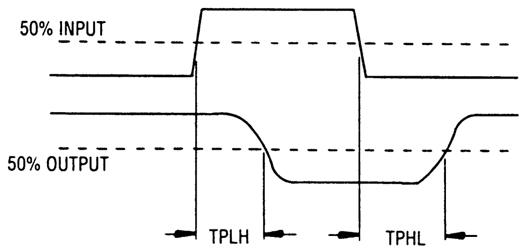


FIG. 2

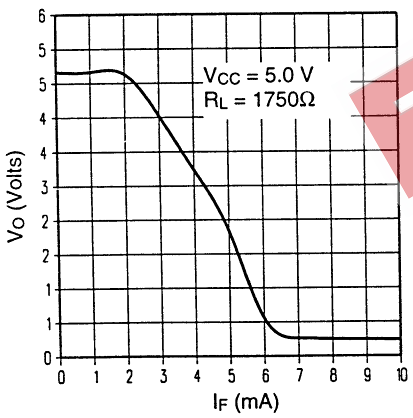
Type OPI1266

Electrical Characteristics (T_A = 0° C to +70° C unless otherwise noted)

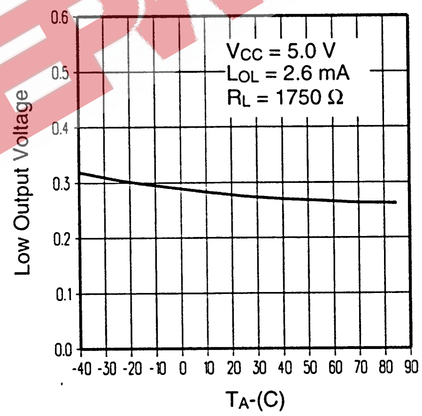
SYMBOL	PARAMETER	MIN	TYP	MAX	UNITS	TEST CONDTIONS
Input Diode						
V_F	Forward Voltage			1.8	V	I_F = 20 mA
I_R	Reverse Current			100	µA	V_R = 2.0 V
Output Ic (V_{CC} = 4.75 V to 5.25 V)						
I_{OH}	High Level Output Current			100	µA	I_F = 0, V_{OUT} = 5.5 V
V_{OL}	Low Level Output Voltage			0.6	V	I_F = 13.5 mA, I_{OL} = 2.6 mA
I_{CCH}	High Level Supply Current			15	mA	I_F = 0
I_{CCL}	Low Level Supply Current			18	mA	I_F = 13.5 mA
Coupled (V_{CC} = 5.0 V)						
C_{IO}	Coupling Capacitance			2.0	pF	Input & Output Leads Shorted
t_{PLH}	Propagation Delay to Low Output Level			800	ns	See Figures 1 & 2
t_{PHL}	Propagation Delay to High Output Level			800	ns	See Figures 1 & 2
$\Delta TP^{(2)}$	Difference in Propagation Delays	-500		500	ns	
I_{ISO}	Isolation Leakage			1.0	µA	@ 7 kV RMS Input & Output Leads Shorted

TYPICAL PERFORMANCE CURVES

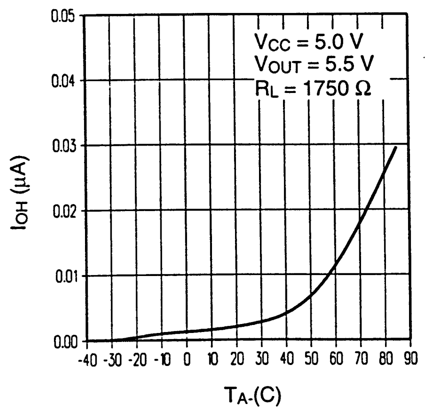
V_{OUT} vs I_F



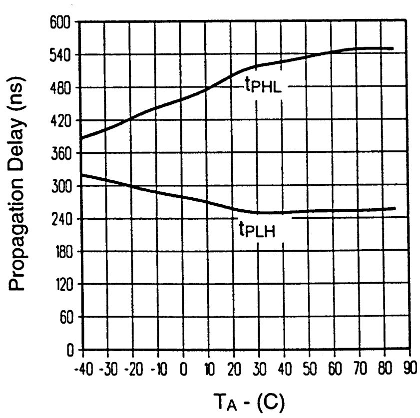
V_{OL} vs T_A



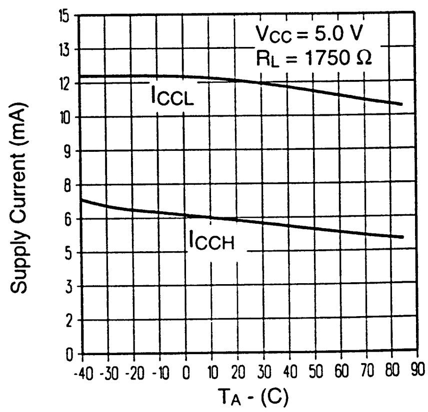
I_{OH} vs T_A



Propagation Delay vs Temperature



I_{CCH} vs I_{CCL} Ambient Temperature



OPTICALLY COUPLED ISOLATORS

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